

WHAT IS CLAIMED IS:

1. An apparatus for deactivating an engine valve in an engine component comprising:  
an engine component having a sleeve cavity and an upper chamber formed therein  
5                    along a common axis, said sleeve cavity and said upper chamber being  
                     connected by a fluid flow passage;  
an accumulator sleeve mounted for sliding movement along said axis in said sleeve  
                     cavity;  
a follower piston retained in an interior of said sleeve for sliding movement along  
10                   said axis, said follower piston adapted to be moved in response to contact  
                     with a cam;  
an upper piston mounted for sliding movement along said axis in said upper  
                     chamber, said upper piston being adapted to activate an engine valve;  
a spool valve disposed in said passage, said spool valve being in a normally open  
15                   position to permit fluid flow through said passage between said sleeve  
                     cavity and said upper chamber; and  
means for selectively actuating said spool valve between a closed position  
                     preventing fluid flow through said passage and said open position,  
whereby when said sleeve cavity, said passage and said upper chamber are filled  
20                   with fluid, movement of said follower piston along said axis causes  
                     corresponding movement of said upper piston for activating a valve when  
                     said spool valve is in said open position and causes opposite movement of  
                     said accumulator sleeve and no movement of said upper piston for  
                     deactivating the valve when said spool valve is in said closed position.  
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2. The apparatus according to claim 1 wherein said spool valve includes a spool body  
having a first control surface in fluid communication with said sleeve cavity and a second  
control surface in fluid communication with said upper chamber.

3. The apparatus according to claim 2 wherein said spool valve includes a first portion having said first control surface formed thereon, a second portion with said second control surface formed thereon, and a third portion extending between and having a smaller diameter than said first and second portions.

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4. The apparatus according to claim 2 including a return spring acting on said second control surface and biasing said spool body to said open position.

5. The apparatus according to claim 4 including an extension formed on said second  
10 control surface and being received in an end of said return spring.

6. The apparatus according to claim 2 including a control valve connected between said upper chamber and said second control surface, said control valve being selectively operable between a closed mode causing said spool valve to be in said open position and an  
15 open mode causing said spool valve to be in said closed position.

7. The apparatus according to claim 1 wherein said upper chamber and said control valve are connected to an oil supply passage formed in said engine component for receiving pressured fluid.

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8. The apparatus according to claim 7 including a check valve positioned in said oil supply passage for permitting fluid flow into said upper chamber from said control valve and a source of pressured fluid.

25 9. The apparatus according to claim 1 wherein said accumulator sleeve is stepped and said follower piston is positioned in a smaller diameter portion of said accumulator sleeve.

10. The apparatus according to claim 1 wherein said accumulator sleeve is stepped and including a return spring surrounding a smaller diameter portion of said accumulator sleeve  
30 and biasing said accumulator toward said spool valve.

11. An apparatus for deactivating an engine valve in an engine component comprising:  
an engine component having a sleeve cavity and an upper chamber formed therein  
along a common axis, said sleeve cavity and said upper chamber being  
connected by a fluid flow passage;  
5 an accumulator sleeve mounted for sliding movement along said axis in said sleeve  
cavity;  
a follower piston retained in an interior of said sleeve for sliding movement along  
said axis, said follower piston being in contact with a lobe of a cam;  
an upper piston mounted for sliding movement along said axis in said upper  
10 chamber, said upper piston being operably connected to an engine valve;  
a spool valve disposed in said passage, said spool valve being in a normally open  
position to permit fluid flow through said passage between said sleeve  
cavity and said upper chamber; and  
means for selectively actuating said spool valve between a closed position  
15 preventing fluid flow through said passage and said open position,  
whereby when said sleeve cavity, said passage and said upper chamber are filled  
with fluid, rotation of said cam causes reciprocating movement of said  
follower piston along said axis and corresponding movement of said upper  
piston activating said valve when said spool valve is in said open position  
20 and causes opposite movement of said accumulator sleeve and no  
movement of said upper piston deactivating said valve when said spool  
valve is in said closed position.

12. The apparatus according to claim 11 wherein said spool valve includes a spool  
25 body having a first control surface in fluid communication with said sleeve cavity and a  
second control surface in fluid communication with said upper chamber, said spool valve  
being in said open position when forces acting on said first and second control surfaces are  
equal.

13. The apparatus according to claim 12 wherein said spool valve includes a first portion having said first control surface formed thereon, a second portion having said second control surface formed thereon, and a third portion extending between and having a smaller diameter than said first and second portions.

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14. The apparatus according to claim 12 including a return spring acting on said second control surface and biasing said spool body toward said open position.

15. The apparatus according to claim 14 including a spring chamber formed in said engine component retaining said return spring and including an extension formed on said second control surface and being received in an end of said return spring.

16. The apparatus according to claim 12 including a control valve connected between said upper chamber and said second control surface, said control valve being selectively operable between a closed mode causing said spool valve to be in said open position and an open mode causing said spool valve to be in said closed position.

17. The apparatus according to claim 11 wherein said upper chamber and said control valve are connected to an oil supply passage formed in said engine component for receiving pressured fluid.

18. The apparatus according to claim 17 including a check valve positioned in said oil supply passage for permitting fluid flow into said upper chamber from said control valve and a source of pressured fluid.

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19. The apparatus according to claim 11 wherein said accumulator sleeve is stepped and said follower piston is positioned in a smaller diameter portion of said accumulator sleeve.

20. The apparatus according to claim 19 including a return spring surrounding a smaller diameter portion of said accumulator sleeve and biasing said accumulator toward said spool valve.